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TYPE 2000 *free radical*
DUPLICATING FILM

summary specifications

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TYPE 2000 DUPLICATING FILM

description

Type 2000 duplicating film is a variable contrast, high resolution, dry processed, non-silver, photosensitive material coated on 2 to 8 mil polyester base. The material is negative working and will produce a stable, continuous tone blue image by direct print-out on commercially available exposing equipment. Only two steps are required to produce a finished copy – exposure and heat fixing. It is designed for making permanent copies of silver halide originals and is therefore suitable for duplicating computer output microfilm, CRT and argon-ion laser recording and duplications of aerial imagery. Second and third generations from Type 2000 films are possible when duplicating on this same material. Type 2000 films are available in the following sizes: 16 mm, 35 mm, 70 mm, 5", 9½" width rolls. 4x5", 5x7", 8x10", 11x14" sheet sizes and standard microfiche sheets and 105 mm rolls. These materials may be stored at room temperature for periods in excess of six months without significant speed or base fog changes. Refrigerated storage at 40°F provides storage life of in excess of one year.

exposure

Type 2000 duplicating film can be exposed to a variety of light sources including Mazda lamps, mercury arcs, "doped" mercury arcs, xenon arcs, electronic flash, fluorescent tubes and lasers. The range of energy levels required to produce a speed point of 1.0 density units above base plus fog is 90-120 mj/cm^2 when exposing through an Eastman #2 silver step wedge with a 400 watt mercury source. After exposure and prior to processing, a low level maximum density is already visible on the duplicate film (.08 to .50).

processing

A simple one-step heating process serves to make the image permanent by driving out residual activator while providing a means for controlling gamma. The time required to fix film is 30 seconds at 170°C. Heating beyond the minimum time period at the same temperature results in increased gamma. Heating at higher temperatures reduces the fixing time to 20 seconds or less. Typical gamma variations possible during fixing at 170°C are shown in Figure 1.

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unique properties

Resolution — Static, contact printing resolutions in excess of 900 cycles are achieved at a total overall contrast of 1000:1 with a standard USAF 1951 resolving power test target.

Extended Gamma Control — By control of the film temperature as well as time of processing, the gamma and D_{max} of Free Radical film can be varied over a range of values. For example, gamma can be varied from 0.9 to over 2. D_{max} can be varied from 1.8 to 3.0.

Reciprocity — No reciprocity failure has been observed over an exposure range from 10^{-8} to 100 seconds.

Image Permanence — Equal to or better than any other dye image system. Up to ten times greater post exposure radiation tolerance than most diazos.

Stability — Pre-exposure room temperature shelf life — 9 to 12 months. When stored in black polyethylene bag in a normal room environment (70°F). When stored in the same package under refrigeration at 40°F — pre-exposure storage life is greater than one year.

exposing/processing equipment

A complete duplication system is practical on modified versions of widely used commercially available systems used for diazo and vesicular film. Design assistance is available on request for the development of processing equipment required for special applications.

sensitometric curves:

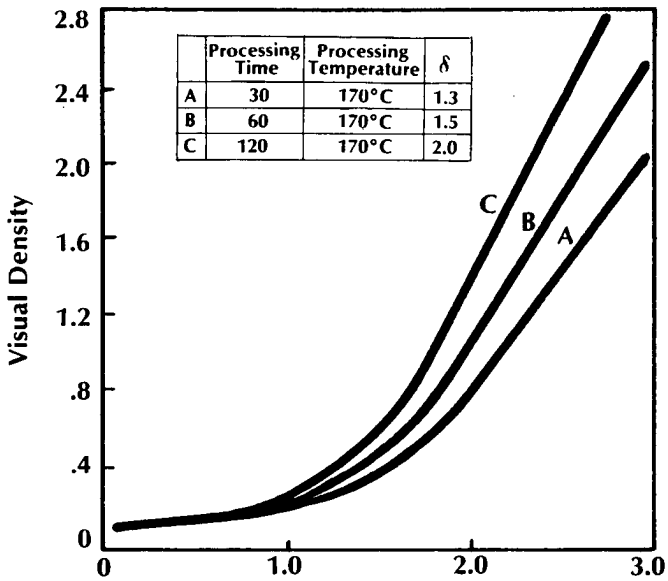


Figure 1 Relative Log Exposure

spectral sensitivity:

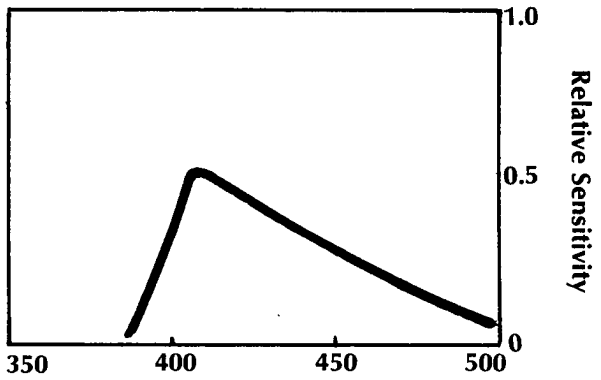
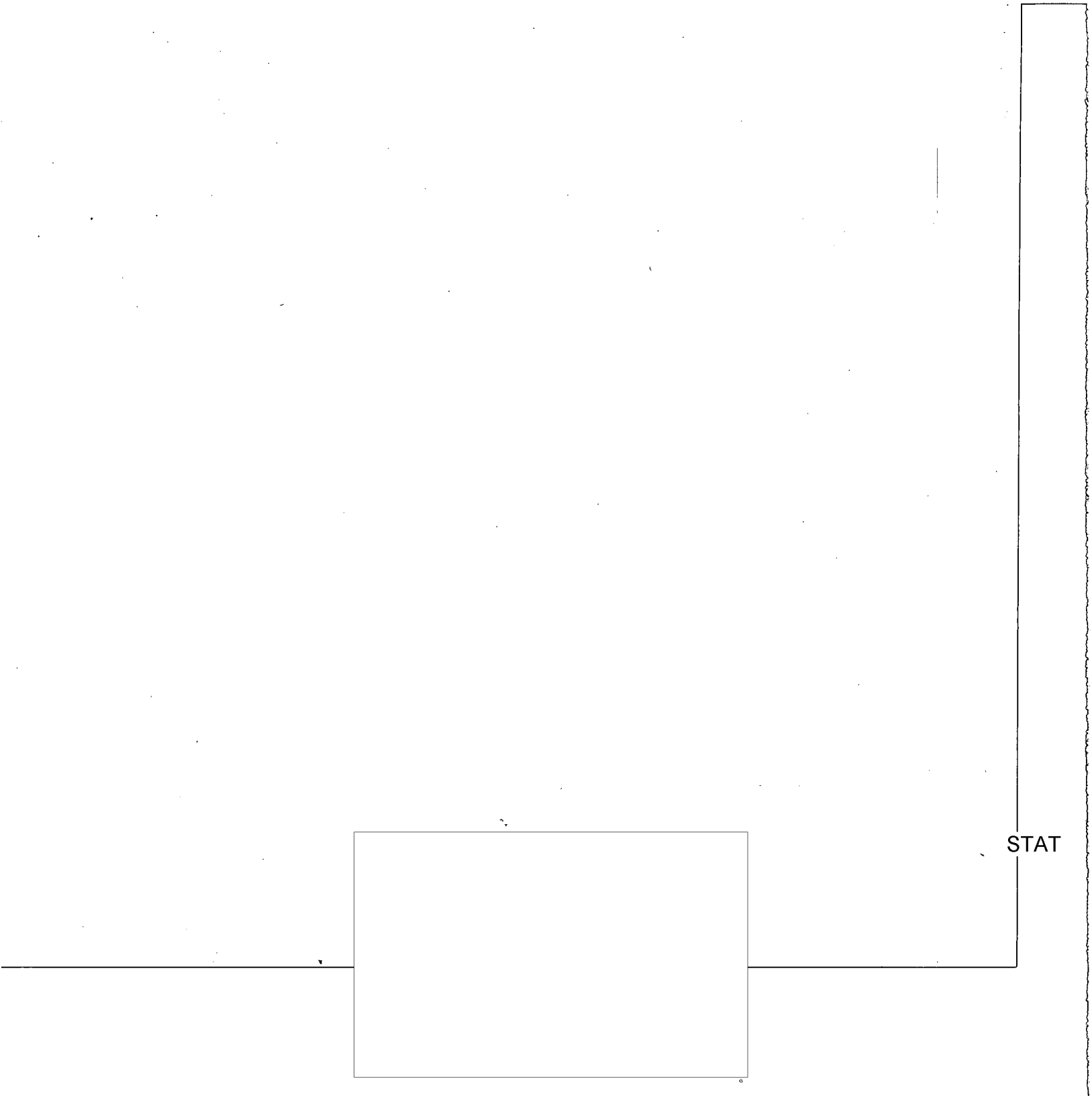


Figure 2 Wavelength (nm)



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